INTELLECTUAL PROPERTY AND TECHNOLOGY LAW
LAW OFFICES OF
MARK O. LOFTIN, P.C.
2370 HILLCREST ROAD, SUITE G #317, MOBILE, ALABAMA 36695
PHONE/FAX: (251) 634 – 1960

MEMBER, ALABAMA STATE BAR
REGISTERED PATENT ATTORNEY
U.S. PATENT AND TRADEMARK OFFICE

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FACSIMILE TRANSMITTAL

CENTRAL FAX NUMBER:	**571-273-8300**
APPLICATION/CONTROL NUMBER:	**10/718,351**
APPLICATION TITLE:	**A METHOD AND DEVICE FOR COMBUSTING LIQUID FUELS USING HYDROGEN**
EXAMINER:	**ALFRED BASICHAS, ART UNIT 3749**
INVENTORS:	**POTGIETER, ET AL.**
FACSIMILE CONTENTS:	**RESPONSE ELECTION REQUIREMENT**

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Examiner Alfred Basichas
Art Unit 3749
U.S. Patent and Trademark Office
PO Box 1450
Alexandria, Virginia 22313-4150

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APPL./CONTROL NUMBER: 10/718,351 FILING DATE:11/27/2003 INVENTORS:
POTGIETER, ET AL.

RE: RESPONSE ELECTION REQUIREMENT

Election of Species Under 37 C.F.R. 1.146:

In response to Examiner's requirement for restriction under 37 C.F.R. 1.146, applicant hereby elects the following claims for examination. All non-elected claims are hereby withdrawn and will be transferred to a divisional application. Although Examiner's Letter identified claims 16-26 as drawn to a patentably distinct invention, claims 21-26 are actually drawn to the "method of combustion" and should be included in the claims elected by this response.

What is claimed and desired to be secured by United States Letters Patent is:

1. (currently amended) A method of combusting a liquid primary fuel comprising the steps of:

establishing a zone of ~~(combusting hydrogen)~~ combustion, spaced from a fuel nozzle, and defined by a flame of ignited hydrogen,

~~injecting a mechanically atomized stream of liquid primary fuel through the zone of combusting hydrogen such that a substantial portion of the liquid primary fuel contacts the~~ hydrogen flame front and hot product gases, and

~~igniting the vaporized portion of the primary fuel by the hydrogen flame.~~

dispersing a liquid primary fuel through said nozzle into the zone of combustion in a partially vaporized and partially atomized state, and

burning the vaporized liquid primary fuel and the atomized liquid primary fuel entering said zone of combustion.

2. (currently amended) The method of claim 1 wherein the ~~hydrogen combustion zone~~ zone of combustion is established by the steps of:

providing ~~flowing~~ a pressurized source of hydrogen ~~at a controlled rate~~ through a ~~plurality~~ conduits ~~each with~~ having a discharge opening adjacent to ~~into~~ said ~~hydrogen combustion zone~~ zone of combustion.

igniting the hydrogen ~~discharging from the conduits~~ discharged through said discharge opening to produce a hydrogen flame; and

rotating the ~~conduits about a central axis to simulate a continuous zone of combusting hydrogen~~ hydrogen flame about a longitudinal axis of the zone of combustion.

3. (currently amended) The method of claim 2, further comprising the step of setting a speed of the rotating hydrogen flame to optimize a combustion efficiency of the primary fuel. ~~increasing the rotational speed of the conduits to maximize the combustion efficiency of the primary fuel is achieved.~~

4. (currently amended) The method of claim 2 where the source of hydrogen flowing through the ~~plurality~~ of conduits comprises a predetermined mixture of hydrogen and oxygen ~~consists of a 2-to-1 molar ratio of hydrogen and oxygen generated from the electrolysis of water~~.

5. (currently amended) The method of claim 2 wherein said discharge opening is radially spaced from said longitudinal axis and ~~plurality of conduits is two, spaced equidistantly and equicentricly around the central axis of rotation with the axis of each discharge~~ opening angled toward the central axis of rotation.

6. (currently amended) The method of claim 2 wherein a speed of the rotating hydrogen flame in a circumferential direction is not less ~~The rotation speed of a point center to the discharge of said conduits is at least equal to or greater~~ than the forward flame velocity of the ~~combusting~~ ignited hydrogen.

7. (currently amended) The method of claim 1 wherein said step of dispersing said liquid primary fuel further comprises flowing a pressurized source of liquid primary fuel through a conduit of a rotating shaft and including a discharge end having an atomizing nozzle to discharge the liquid primary fuel into the zone of combustion. ~~injection of liquid primary fuel further comprises the step of flowing a pressurized source of liquid primary fuel at a controlled rate through a plurality of conduits rotating about a central axis with the discharge end of each conduit fitted with a liquid atomizing nozzle which discharges the primary fuel into the zone of combusting hydrogen.~~

8. (canceled)

9. (currently amended) The method of claim 1 where said primary fuel is selected ~~taken~~ from the group ~~consisting of: 1)~~ comprising processed and unprocessed vegetable oils, ~~2)~~ by-product oils from agricultural products processing, ~~3)~~ liquid ~~or~~ and liquefied petroleum fuels, ~~or 4)~~ and liquid ~~or~~ and liquefied animal fats.

10. (currently amended) The method of claim 2 where the steps of ~~flowing the~~ providing pressurized hydrogen from the hydrogen source further includes the steps of:

generating a constant rate of hydrogen and oxygen gases from the electrolysis of water ~~by regulating the electrical current input to the electrolysis cell~~, and

transferring the hydrogen and oxygen gases into a fixed-volume staging chamber ~~formed around the central axis of rotation~~ such that the hydrogen and oxygen gases are continuously exposed to an inlet openings of ~~the rotating~~ conduits.

11. (currently amended) The method of claim 1 further including a step of injecting a controlled rate of an additive selected from steam or water into the zone of combustion ~~wherein an additional step of injecting a controlled rate of water or steam into the zone of combusting hydrogen is used~~ to control the formation of oxides of nitrogen.

12. (currently amended) The method of claim 11 wherein the injection of said additive ~~water~~ is accomplished by pre-mixing the water at a controlled rate with the liquid primary fuel.

13. (withdrawn)

14. (cancelled)

15. (cancelled)

16. (withdrawn)

17. (withdrawn)

18. (withdrawn)

19. (withdrawn)

20. (withdrawn)

21. (new) The method of claim 1 wherein the zone of combustion is defined by generally conical surface symmetric about a longitudinal axis.

22. (new) The method of claim 4 wherein that predetermined mixture of hydrogen is a molar ratio of hydrogen to oxygen having a value of 2:1.

23. (new) The method of claim 22 wherein the source of hydrogen and oxygen flowing through the conduit is obtained from the electrolysis of water.

24. (new) The method of claim 2 further comprising the steps of providing a second conduit for delivering hydrogen through a second discharge opening adjacent to the zone of combustion, igniting the hydrogen discharging through said second discharge opening to produce a second hydrogen flame, and rotating said second hydrogen flame about the longitudinal axis.

25. (new) The method of claim 25 further comprising the steps of providing a plurality of additional conduits for delivering hydrogen through additional discharge openings with said additional discharge openings extending radially outward from the longitudinal axis relative to the first two hydrogen discharge openings, igniting the hydrogen discharging through said additional conduits to produce a plurality of hydrogen flames, and rotating said plurality of hydrogen flames about the longitudinal axis in the same rotational direction as said first and second discharge openings.

26. (new) The method of claim 25 where the plurality of additional conduits for delivering hydrogen are rotated in a direction opposite to the first and second conduits along the longitudinal axis.

Mark O. Loftin
Customer No. 33213